



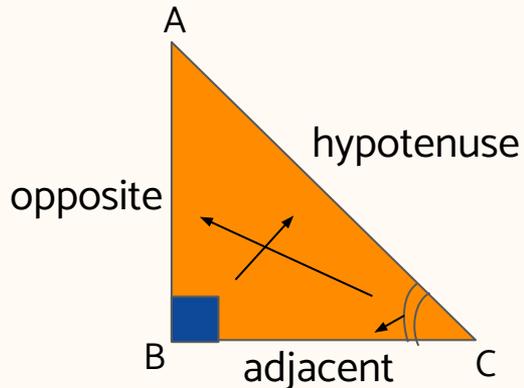
Created by: Vic Kuang

Trigonometric Ratios

What are Trigonometric Ratios?

Trigonometric ratios are the ratios of the sides of a right triangle. There are three common trigonometric ratio: sine (sin), cosine (cos), and tangent (tan).

To find the ratios, we have to **label the sides of the triangle** with hypotenuse, opposite, and adjacent.



This example is defined for angle C. Here is how to label the sides:

The hypotenuse is always opposite of the **right angle**.

The opposite is always the **opposite** of the **given angle**. In this example, the opposite side is the opposite of angle C.

The adjacent is always **next to** the **given angle**. In this example, the adjacent side is next to angle C.

Trigonometric Ratios



Sine (sin)

$$\text{Sin} () = \frac{\text{opposite}}{\text{hypotenuse}}$$

Cosine (cos)

$$\text{Cos} () = \frac{\text{adjacent}}{\text{hypotenuse}}$$

Tangent (tan)

$$\text{Tan} () = \frac{\text{opposite}}{\text{adjacent}}$$

() will be replaced with whatever angle the question is asking you to find.

Easy Way to Remember the Trigonometric Ratios

SOH, CAH, TOA

SOH

Sin is **o**pposite over
hypotenuse

$$\text{Sin} () = \frac{\text{opposite}}{\text{hypotenuse}}$$

CAH

Cos is **a**djacent over
hypotenuse

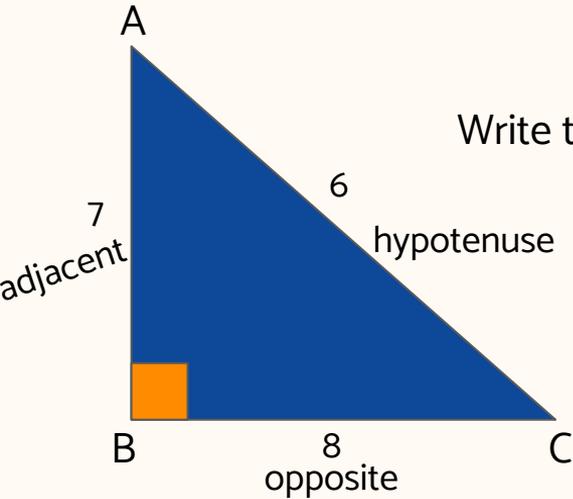
$$\text{Cos} () = \frac{\text{adjacent}}{\text{hypotenuse}}$$

TOA

Tan is **o**pposite over
adjacent

$$\text{Tan} () = \frac{\text{opposite}}{\text{adjacent}}$$

How to Solve Trigonometric Ratio Questions



Write the trigonometric ratios for Sin (A), Cos (A), Tan (A).

- 1) Label the sides with hypotenuse, adjacent, and opposite. (Remember, label it using angle A)
- 2) Use SOH, CAH, TOA to find out the trigonometric ratios.

Sin is opposite over hypotenuse. So, the trigonometric ratio for Sin (A), is **8/6**.

Cos is adjacent over hypotenuse. So, the trigonometric ratio for Cos (A), is **7/6**.

Tan is opposite over adjacent. So, the trigonometric ratio for Tan (A), is **8/7**.

You're done!

$$\text{Sin (A)} = \frac{8}{6}$$

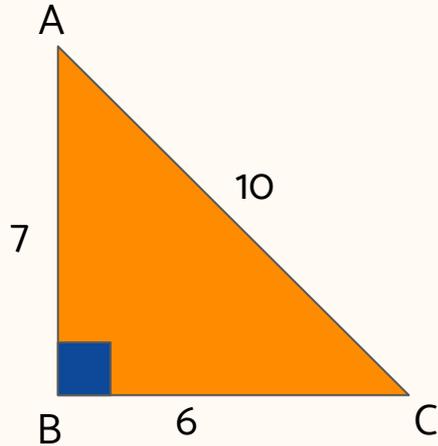
$$\text{Cos (A)} = \frac{7}{6}$$

$$\text{Tan (A)} = \frac{8}{7}$$

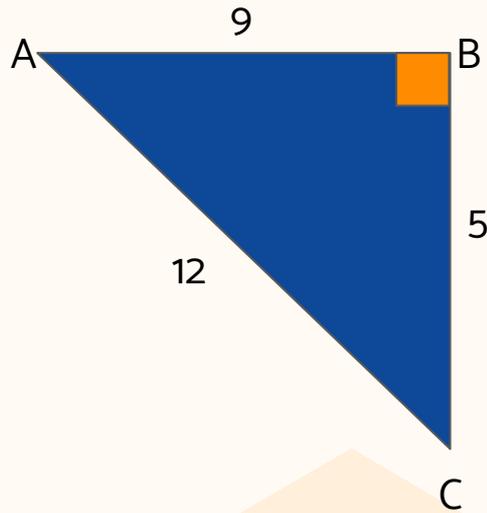
Practice Questions

Write the trigonometric ratios for Sin (C), Cos (C), Tan (C) for questions 1 and 2

1)

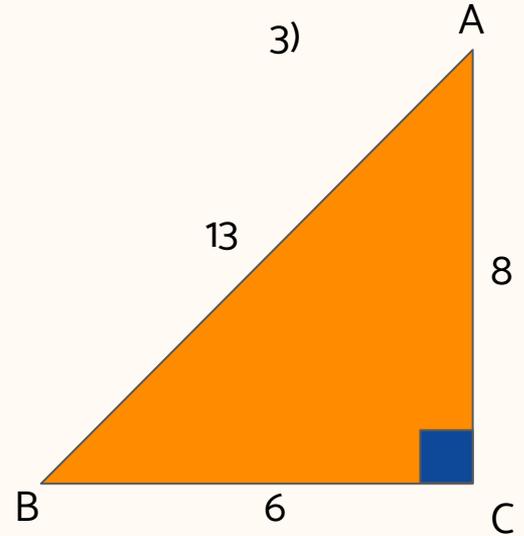


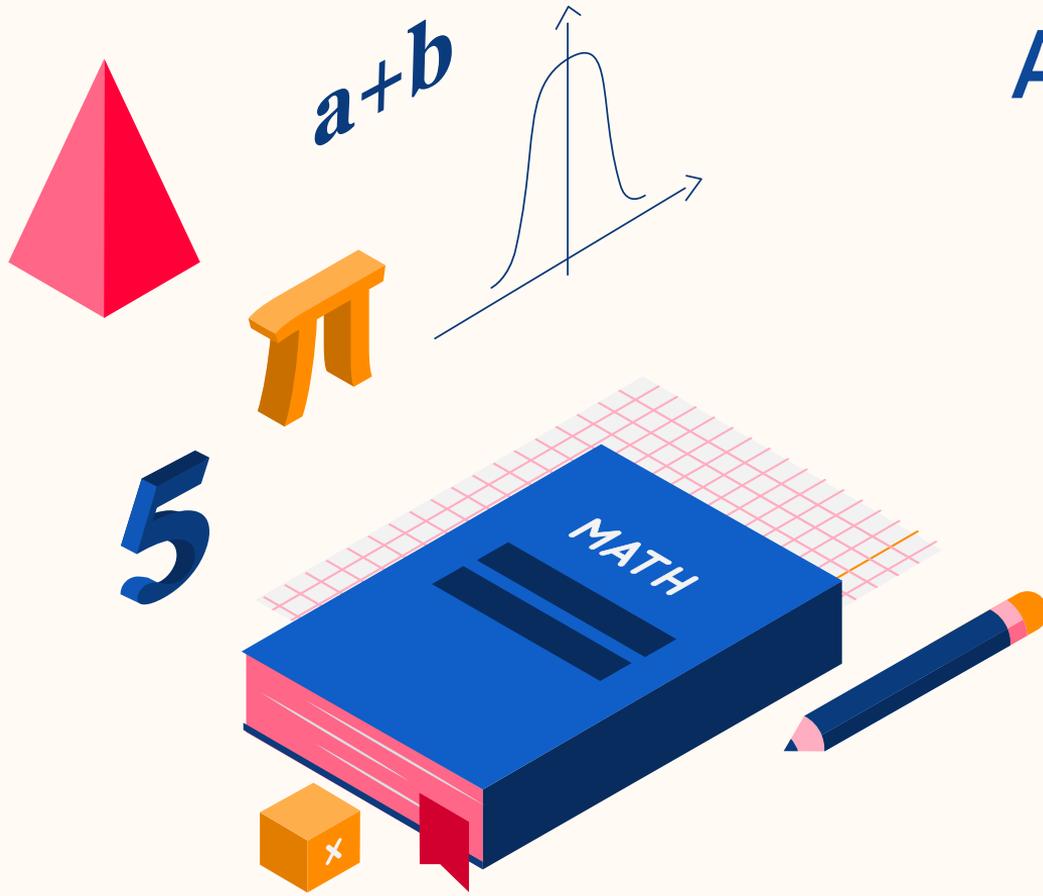
2)



Write the trigonometric ratios for Sin (B), Cos (B), Tan (B) for question 3

3)

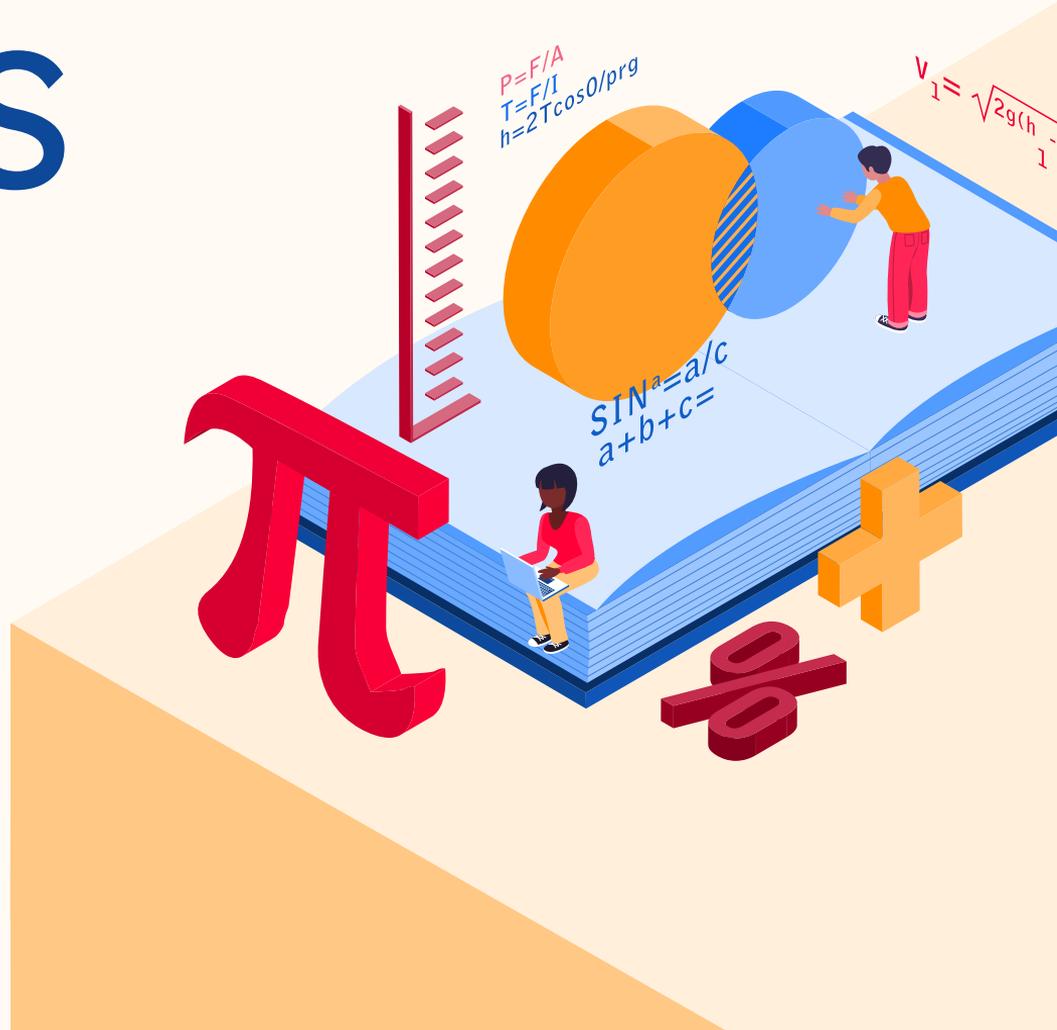




Answer Key

- 1) $\sin(C) = 7/10$
 $\cos(C) = 6/10$ or $3/5$ (simplified)
 $\tan(C) = 7/6$
- 2) $\sin(C) = 9/12$ or $3/4$ (simplified)
 $\cos(C) = 5/12$
 $\tan(C) = 9/5$
- 3) $\sin(B) = 8/13$
 $\cos(B) = 6/13$
 $\tan(B) = 8/6$ or $4/3$ (simplified)

THANKS



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